Superfund SITE

FIELD CHANGE REQUEST (FCR) FORM

Contract No.:

REQUEST NO: 13 DATE: 9/29/11

FCR TITLE: Earthworm Tissue Collection and Analysis

DESCRIPTION: Soil preliminary remediation goals (PRGs) were derived using terrestrial receptor food chain models that were used to evaluated risks to upper trophic level receptors in the screening level ecological risk assessment (SLERA) for the site. Site-specific tissue data was not collected in support of the SLERA. In the absence of such data, soil bioaccumulation factors (BAFs) were used to estimate tissue concentrations in food items consumed by model receptors to calculate the dose of chemicals ingested daily. The resultant food chain model-based PRG values, specifically the ones calculated for lead via the insectivorous mammal and bird models, were orders of magnitude lower than those values calculated based on herbivorous mammal and bird models. The wide range in concentrations was dictated primarily by the food item consumed in the models and the notion that BAFs typically tend to over-estimate concentrations of a given chemical in modeled tissues, especially soil-to-soil invertebrate BAF values.

XX has been tasked to conduct an additional field effort to collect and analyze earthworm tissue and soil from terrestrial environments. The data will be used to re-run the American robin and short-tailed shrew food chain models for use in soil PRG development.

The collection and analysis of collocated soil and earthworm tissue was not included in the October 20XX Final Quality Assurance Project Plan (QAPP) for site. The following worksheets from the Final QAPP were revised and attached to this FCR to reflect the collection of collocated soil and earthworm tissue from Area 9:

- Worksheet No. 14 provides a summary of project tasks
- Worksheet No. 17g provides the biota sampling design and rationale
- Worksheet No. 18 provides the sampling locations and methods
- Worksheet No. 26 provides sample handling methods

REASON FOR DEVIATION: This is an additional activity needed to generate supplemental field data to support the development of soil PRGs aimed at the protection of terrestrial ecological receptors utilizing XX. The collection and analysis of collocated earthworm tissue and soil was determined following the remedial investigation (RI) and QAPP development.

RECOMMENDED MODIFICATION: Collect and analyze earthworm tissue and collocated soil samples from XX for metals analysis. Earthworm collection methods are discussed in detail in the attached revised QAPP Worksheet 17g. Results of the chemical analysis will be used to re-run the American robin and short-tailed shrew food chain models. The models will then be adjusted as appropriate to back calculate and develop Area 9 soil PRGs.

In the event that earthworms are not found within XX, bulk soil samples will be collected for use in a soil bioaccumulation study in order to generate the data needed to derive the soil PRGs. Earthworms used in the bioaccumulation study will be cultured organisms supplied by the toxicity laboratory. If

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required, bioaccumulation tests will be done in accordance with *American Society of Testing and Materials (ASTM) E1676 – 04, Standard Guide for Conducting Laboratory Soil Toxicity or Bioaccumulation Tests with the Lumbricid Earthworm Eisenia Fetida and the Enchytraeid Potworm Enchytraeus albidus*. At test termination, worms will be submitted for metals analysis.

A laboratory Quality Control (QC) sample will be run as appropriate and will consist of a matrix spike and duplicate (MS/D). No field duplicate sample will be collected as a "true" duplicate can only be obtained from the tissue homogenate at the laboratory.

IMPACT ON PROJECT OBJECTIVES: The procedures herein do not impact the project objectives in the 2010 Final QAPP but represent new objectives to supplement the project dataset in order to derive the appropriate risk-based soil PRGs for terrestrial environments of XX.

Dated Signatures: _____

(Ecological Risk Assessor)

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(Project Manager)

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(Project Manager)

Distribution:

T. Mitchell, EPA Remedial Project Manager
Quality Assurance Coordinator
RI Task Leader
Project File